

# **GAS Leak**

Genuinely Approachable Sudoku from the CtC Discord

Volume 18:

July 2022



July was a month of celebrations for GAS. No, not US Independence Day - we missed that one entirely. But we did celebrate two birthdays (Sam; Philip), Bastille Day, and, erm, the National Day of the Isle of Man, all in true GAS style - with puzzles. Thanks for celebrating with us! (And just in case anybody feels inspired to set *me* a cheeky birthday puzzle, my birthday is in October, hint hint... ;)) In this eighteenth edition of GAS Leak, you'll find all of the July puzzles, plus a handful that were set during the month but didn't make it into the rotation. Happy solving, and we'll see you again in August!

*Clover*

**July 1, 2022: Zones**  
Sam Cappleman-Lynes

Today's GAS might look like a familiar variant  but it's actually a Zones Sudoku!

Normal Sudoku rules apply. Also, there are some cages in the grid. A digit that is written in the corner of the cage must appear somewhere in the cage. If a digit is written more than once, then it must appear at least that many times in the cage.

138				2455			129	
		444						
				111			3668	
				56789				
4778		222						
							333	
259		1388						124

f-puzzles - <https://f-puzzles.com/?id=2byrv3ab>

CtC - <http://tinyurl.com/5n89wcns>

**July 2, 2022: 00005**

Philip Newman

Many of you may have already been aware of Agent 0006, but only a true James Bond fanatic will remember the time when (due to the Bernoulli effect) the franchise was briefly penned by evil twin Fian Lemming. In these stories, now considered apocryphal, M became obsessed with the United States postal system and all agents were given five digit designations. Of course, Bond (James Bond) refused to go along with this and 007 was a rogue agent for a time until uncovering the secret plots of S.M.U.S.H. together with Agent 00005.

Today's GAS is a 00005 Killer! Normal sudoku rules do not apply. Fill the grid so that each row, column, and 3x3 region contains the digits 1 through 5, as well as four blank cells. Blank cells may never share an edge. Digits in a cage may not repeat (although a cage can contain multiple blanks), and must sum to the indicated value.

8			6				2	
		9						
	5		3		2			
6				1				
								5
		4			5		4	
	3							
					9			6
				8				

Play on f-puzzles: <https://f-puzzles.com/?id=23r6buhw> (answer checking will not work!)

Play on CTC App: <http://tinyurl.com/musyx5e4> (manually click 'check' to verify your answer)

Play on Penpa+: <http://tinyurl.com/bdd9sywa> (automatic answer check)

July 3, 2022

Clover

Did you know that today is International Opposite Day? In this channel, we're celebrating the occasion by only telling lies. Even today's liar sudoku is getting in on the action. By the way, you're all a pack of graceless, miserable little weasels and you certainly don't make my day better with your kind and enthusiastic comments every time I post. 😞

Normal sudoku rules apply. Also, each cage is marked with a value exactly 1 off from the correct value that goes in that cage. For instance, if a cage is marked with a 2, it must contain either a 1 or a 3. If a cage is marked with a 9, it must contain an 8.

		2	2		3	3		
				7				
2		4	4		5	5		3
2	6			8			6	3
		3		8		3		
	4		7		7		8	
	4						2	
			5		5			
		7	6		6	8		

f-puzzles: <https://f-puzzles.com/?id=2ccusmq>

CtC: <https://tinyurl.com/3ftnaw64>

## July 4, 2022: Meandering Numbers

Sam Cappleman-Lynes

Don't you hate it when you're trying to solve a Sudoku and your numbers just get up and start walking off the page? No, I haven't gone mad or taken any hallucinogenic substances: today's GAS is a Meandering Numbers Sudoku!

Normal Sudoku rules apply. In addition, in each of the blue regions, there must be a path that visits all of the numbers from 1-9 in order, travelling only horizontally and vertically.

			2	3				
	1		5				2	
						6		
1	3							
	9			5			3	
							7	4
		6						
	5				3		9	
				9	5			

f-puzzles - <https://f-puzzles.com/?id=2o35raxp>

CtC - <https://tinyurl.com/39y9bpcw>

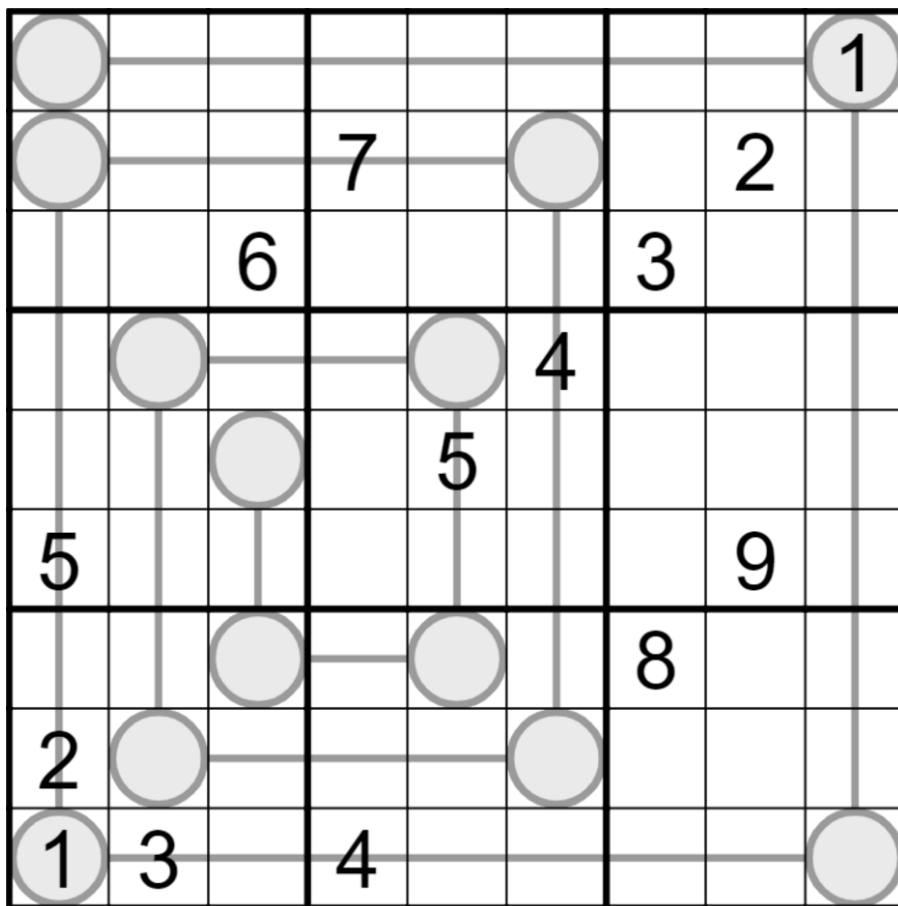
## July 5, 2022: Laa Tinvaal

Philip Newman

Here at GAS, we make sure to celebrate every important holiday, even if it is not relevant to the setter posting that day. I can't think of any we haven't acknowledged. To make sure we keep our perfect streak alive, today's puzzle is in honor of Tynwald Day, the National Day of the Isle of Man.

As Dr. John Clague described in his 1911 book *Coinaghtyn Manninagh*: "Er Laa Tin Vaal ta sleih cheet voish dy chooilley ard jeh Mannin dy chlashtyn ny slattyssyn focliit magh. Ta ny shenn tosheelioarree livrey ny slattyn oc da'n Chiannoort, as ta'n chied vriw loo ny feallagh noa stiagh. Eisht ta dy chooilley hoshiagh-jioarey gliooney sheese roish yn Chiannoort, as goaill yn tlat ehey veih laueyn yn Chiannoort. Ta toshiaghjioarey Glenfaba lhaih ny slattyssyn ayns Gaelg." Does Mark speak Manx? >\_>

Today's puzzle is a Between Line Sudoku! Normal sudoku rules apply. Digits along a line must have values strictly between the values in the circles on the ends of that line.



Play on f-puzzles: <https://f-puzzles.com/?id=2f69538g>

Play on CTC App: <https://tinyurl.com/29httahf>

## July 6, 2022: Ascending Starters

Clover

Today's GAS celebrates what promises to be one of the gnarliest puzzles in round 7 of the 2022 Sudoku Grand Prix, with an ascending starters sudoku. Read carefully today and feel free to ask questions, since the rules to this one are a little quirky.

Normal sudoku rules apply. Also, some rows or columns have a clue next to them. These clues give the sum of the run of increasing digits in that row or column starting in the cell closest to the clue. A run may consist of only one cell.

(Examples: A clue of 8 to the left of a row would be valid if the digits in that row started with "8 7" or "1 2 5 4", but not if they started with "8 9" (which sums to 17) or "1 3 6 2" (which sums to 10).

A clue of 20 to the right of a row would be valid if the digits in that row ended with "4 9 8 3" (increasing digits  $3+8+9 = 20$ ) or "1 6 5 4 3 2" (increasing digits  $2+3+4+5+6 = 20$ ). )

Hint for new solvers: Remember that each clue sums the entire increasing run. So, the first digit after the sum is reached must be lower: for instance, 2 5 8 is not a valid way to fulfill a "7" clue.

*The puzzle and links appear on the following page.*



			<b>3</b>		<b>4</b>				
2	<b>2</b>								<b>8</b>
5			<b>1</b>		<b>2</b>				
			<b>4</b>				<b>5</b>		
			<b>5</b>				<b>6</b>		
10			<b>6</b>				<b>7</b>		
24	<b>7</b>								<b>3</b>
				<b>3</b>					

f-puzzles: <https://f-puzzles.com/?id=23x6hppz>

CtC: <https://tinyurl.com/yc5yn9wz>

## July 7, 2022: Extra Regions

Sam Cappleman-Lynes

Today's GAS is an Extra Regions Sudoku! Consider this an apology for all the 000X puzzles we made you leave empty cells in - this puzzle has a whole 36 extra cells to make up for it!

Normal Sudoku rules apply. Each grey area must also contain each number from 1-9 exactly once.

					1	2	3	4
								5
								6
	1	2	3	5	8			7
	8				9			
	6				4			
	2				5			
	7	8	9	1	6			

f-puzzles - <https://f-puzzles.com/?id=2qdvgr85>

CtC - <https://tinyurl.com/5cmb6bkt>

## July 8, 2022: Your Grid A Splode

Philip Newman

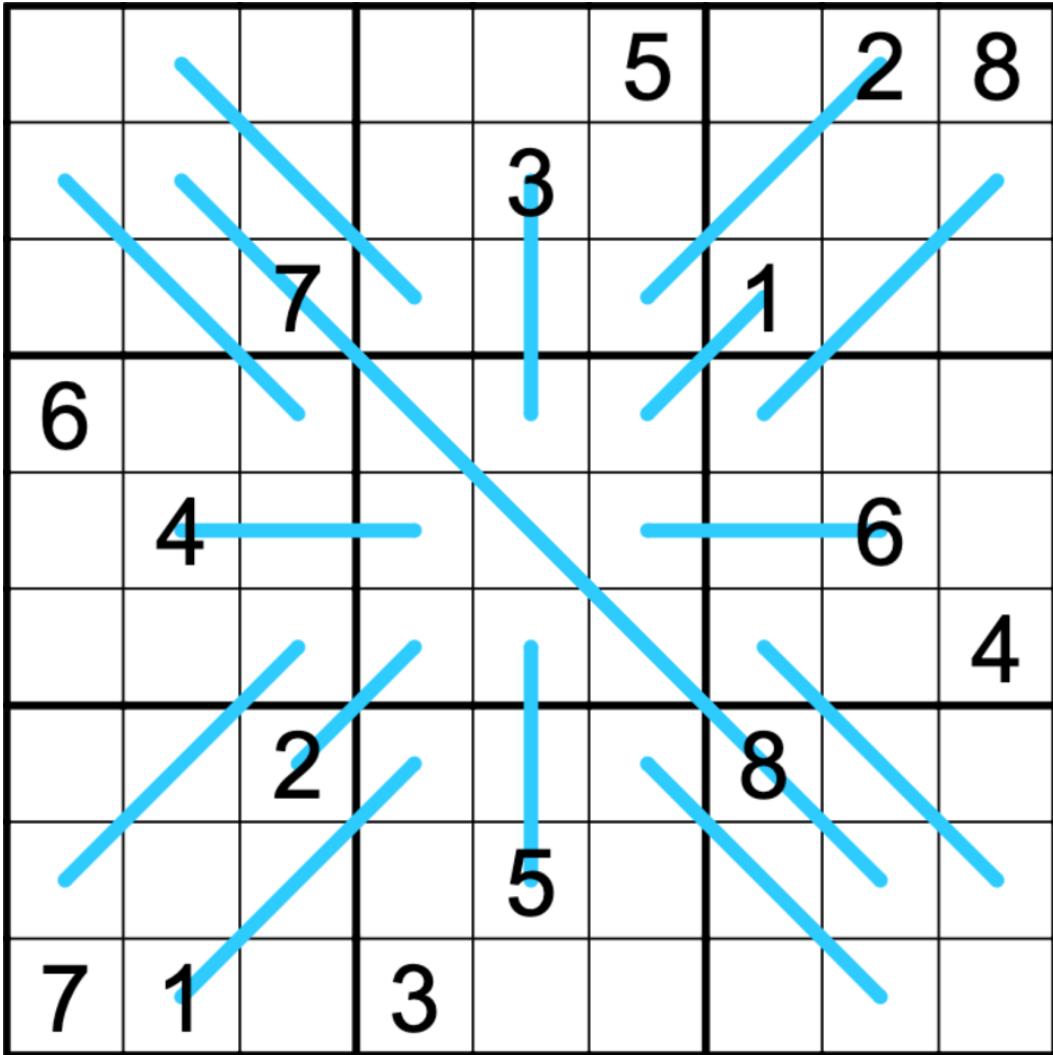
This won't be news to the five or so of you who read #theory-and-programming, but this week has seen some excitement here. Ordinarily, my PC is running constantly generating sudoku grids - in addition to finding absurdly hard puzzles (some of which are vulnerable to the same tricks as my Patreon contest puzzle... some, not so much) I am also part of the group doing an exhaustive search of all 17 given classic puzzles (currently there are 49158 known, and it is unlikely at this point that any more will be found).

On Tuesday, there was a loud pop and the power went out in my office. Apparently all that sudoku power did a number on the power supply! Everything seems to be fine other than the PSU, which fortunately was still under warranty, but my SudokuCoin mining machine is out of action until the replacement arrives.

Today's GAS is an explosive Region Sum Lines Sudoku!

Normal sudoku rules apply. Also, there are some lines in the grid, and each line passes through more than one of the 3x3 regions. Along each line, the digits in every region it passes through have the same sum. (For instance,  $r1c2 + r2c3 = r3c4$ )

*The puzzle and links appear on the following page.*



Play on f-puzzles: <https://f-puzzles.com/?id=2zxrql3v>

Play on CTC App: <https://tinyurl.com/3trwxzvj> (no solution check today, the Mac isn't set up for it!)

## July 9, 2022: Pointing Digits

Clover

I hope you've tried this weekend's Sudoku Grand Prix, because I sure haven't (yet). Here's one last warmup puzzle to enjoy, which celebrates another lesser-known variant appearing in this round: a pointing digits sudoku!

Normal sudoku rules apply. If a digit N appears in a cell with an arrow, the same digit must also appear N steps away in the direction that the arrow is pointing.

For instance, if a 1 appears in an arrow cell, the next cell (diagonally) in that direction must also be a 1. If a 2 appears in an arrow cell, the cell 2 steps away in that direction must also be a 2.

				5				
		↗		↘				
		6				3	↘	
			↖	7	↙			
9		↗	6		8	↙		7
			↗	9	↘			
	↖	7				8		
				↖		↙		
				3				

f-puzzles: <https://f-puzzles.com/?id=2lfjav2s>

CtC: <https://tinyurl.com/yckbh4mr>

## July 10, 2022: Classic Sudoku

Sam Cappleman-Lynes

Now that the tennis is over I suppose I should get around to posting this 😊

Today's GAS is a Classic Sudoku! Normal Sudoku rules apply - and that's it!

		1	5	9				
		2	1	7				
							4	3
							8	4
6	5						1	7
4	3							
7	8							
				6	1	5		
				4	2	6		

f-puzzles - <https://f-puzzles.com/?id=2jepvxb>

CtC - <https://tinyurl.com/2zyvw28b>

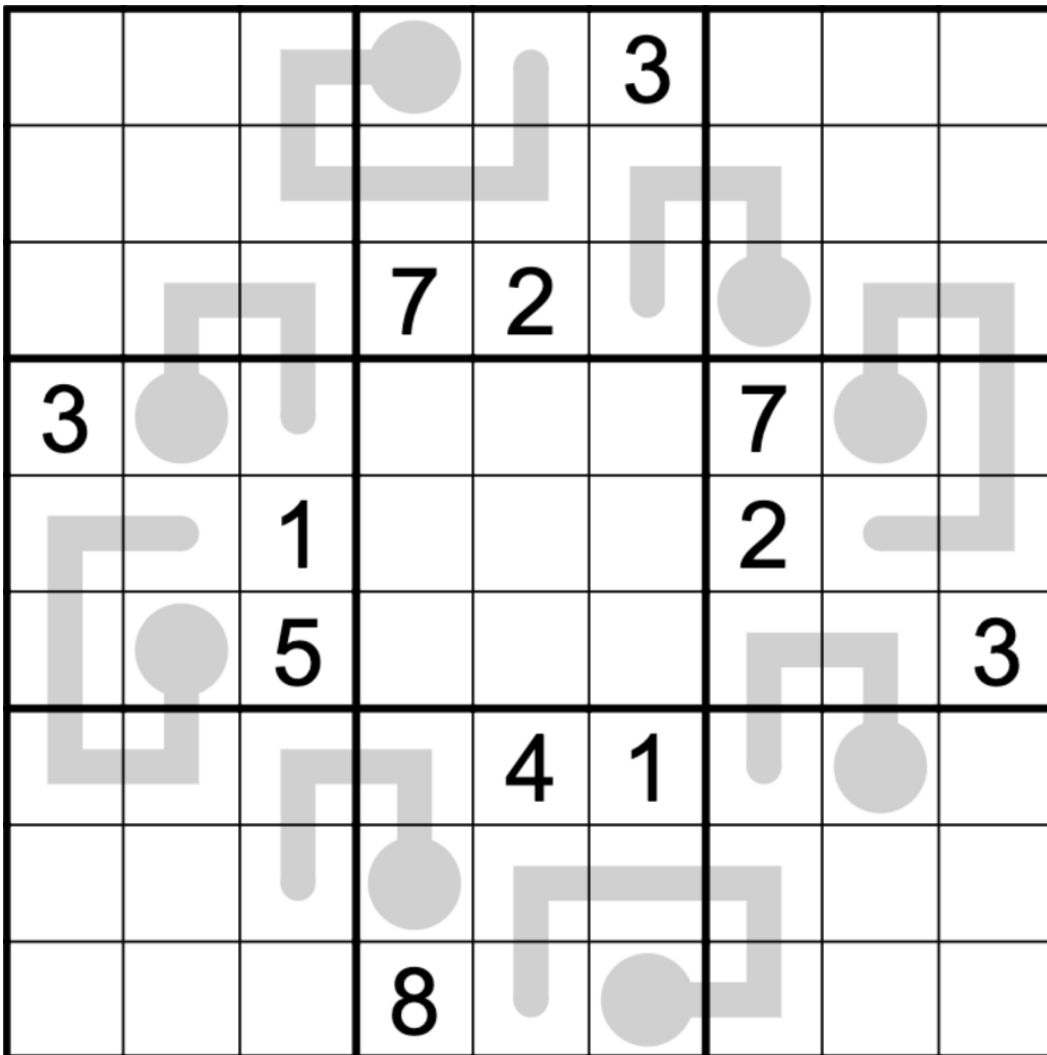
**July 11, 2022: Slurpee**

Philip Newman

Warning: Do not solve this puzzle if you are currently experiencing brain freeze from drinking a free Slurpee too fast.

Today's GAS is a Thermo Sudoku!

Normal sudoku rules apply. Digits along thermometers must strictly increase from bulb to tip.



Play on f-puzzles: <https://f-puzzles.com/?id=2qbxgs94>

Play on CTC App: <https://tinyurl.com/mr4dtuhy> (still no answer check!)

## July 12, 2022: Seminonconsecutive

Clover

No! I refuse! I absolutely will not be setting a nonconsecutive GAS. Every time I try to solve one, I end up uncontrollably spinning around in my chair making weird choking noises, and whenever I start setting one, it's always "Clover, you made a killer sudoku again? Wasn't this meant to be a completely different variant?"

Oh gosh, stop looking at me like that...

Okay, fine. You can have a little nonconsecutive. As a treat. 😊

In today's seminonconsecutive GAS, normal sudoku rules apply. Also, some rows and columns are marked with '0'. Within these rows and columns, digits may never be consecutive.

	0		0			0		0	
0	1		3		5		7		9
0	7		9		1				5
	5		4		8		2		3
0	3				7		8		1
0	9		1		3		5		7

f-puzzles: <https://f-puzzles.com/?id=2b58mf9o>

CtC: <https://tinyurl.com/4kpe7hf8>

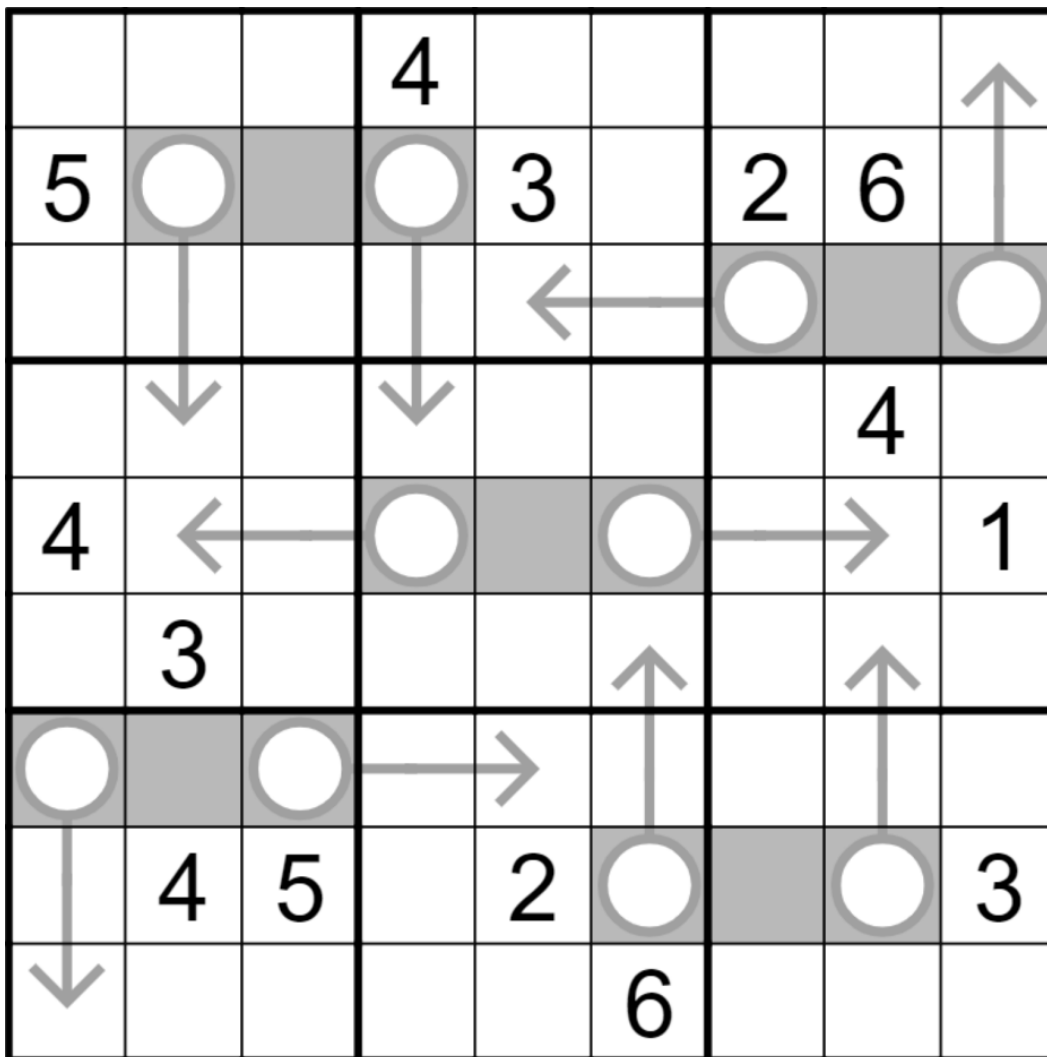


## July 13, 2022: Clone/Arrow

Sam Cappleman-Lynes

Good afternoon! Today is a perfectly ordinary day. And so is tomorrow. There is definitely nothing at all of note happening tomorrow.

With that out of the way, today's GAS is a Clone / Arrow Sudoku. Normal Sudoku rules apply. In addition, the numbers placed on the body of an arrow must add up to the number in the corresponding circle. Furthermore, the five grey shapes in the grid are all exact clones of each other - they contain the same numbers in the same relative positions.



f-puzzles - <https://f-puzzles.com/?id=27yvnblw>

CtC - <https://tinyurl.com/2p96tjrz>

## July 14, 2022: Pastel Day

Philip Newman

Sam was being a bit coy yesterday about today being perfectly ordinary. It's ok Sam, I'm sure everyone wants to celebrate your special day with you. That's right, it's Sam's favorite holiday, Pastel Day!

To celebrate, we have decorated the ultra secure top secret vault. (That's right: the entire month of April puzzles focused on security was merely a distraction from the existence of this vault, bwahahaha.) Isn't it beautiful?

Fortress Sudoku!

Normal sudoku rules apply. Digits in non-white cells must be greater than digits in orthogonally adjacent white cells. (Note: If you have trouble making out which cells are highlighted - every given digit is in a non-white cell, and all other cells are white.)

	7						5	
4		8				9		7
	9						8	
			4	9	2			
			8		6			
			3	5	7			
	8						9	
7		9				8		5
	5						6	

Play on f-puzzles: <https://f-puzzles.com/?id=yv8vkwp9> (still no answer check!)

Play on CTC App: <https://tinyurl.com/8c6pxkd3> (still no answer check!)

## July 15, 2022: Makodoku

Clover

Today's GAS is a makodoku. That's what you get when you cross a mako shark with a sudoku: very sharp teeth and 81 dangerous digits.

Normal sudoku rules apply. Digits separated by a "+" must have a sum of less than 10. Digits separated by a "x" must have a product of less than 10.

Not all + or x are necessarily given. Also, if two digits both add and multiply to values less than 10, they might be marked with a +, a x, or neither.

Note for experienced solvers: To my knowledge, this variant has always been presented with a negative constraint in the past. My take on it doesn't use a negative constraint - just think of it as the kropki pairs to makodoku's kropki. 😊

		9	x	x	x	x	4		
	7							6	
		5	+				+	3	
x				+		+			+
1			+		9		x		7
				x	x				
		8					6		
								2	x
	+	4						x	
		6					7		

f-puzzles: <https://f-puzzles.com/?id=24na9cme>

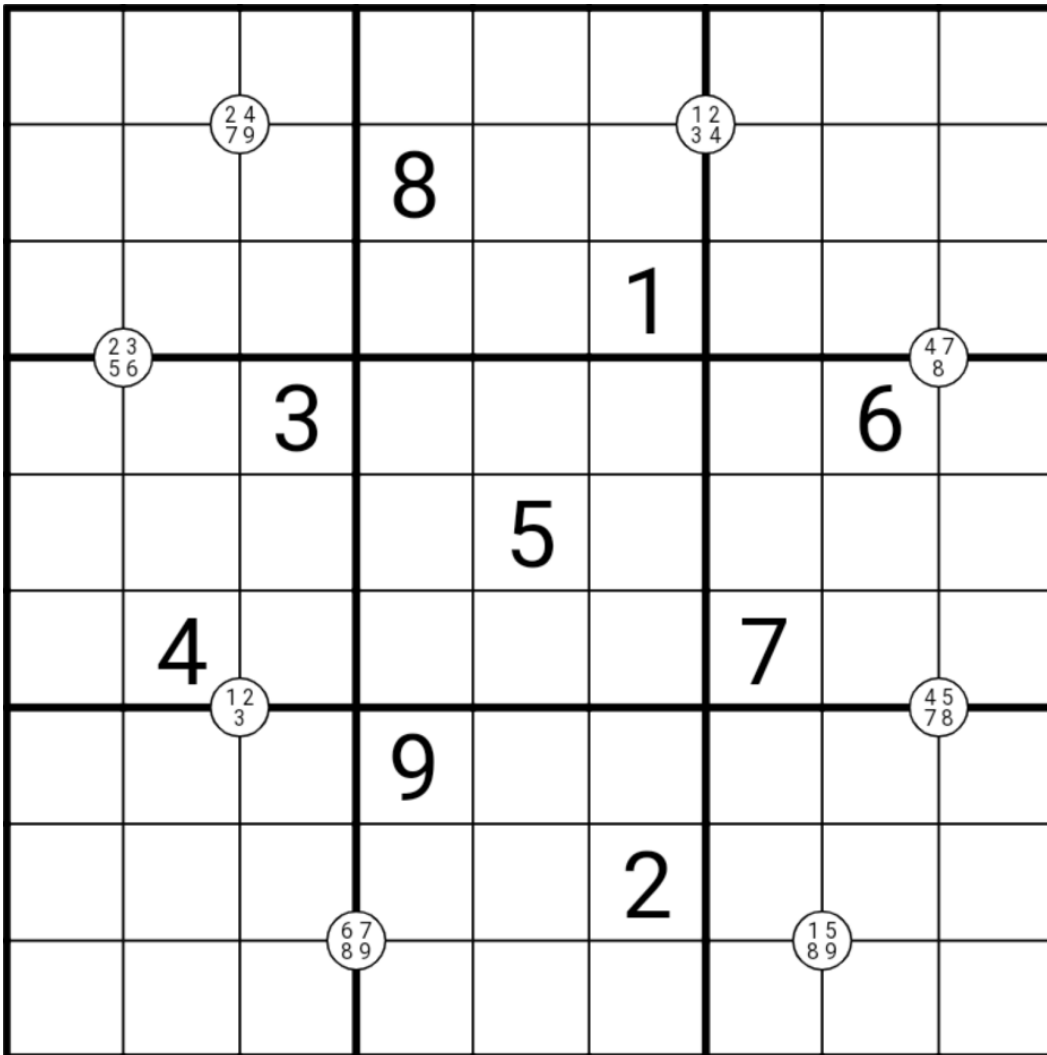
CtC: <https://tinyurl.com/32pykcb>

## July 16, 2022: Quadruples

Sam Cappleman-Lynes

Good afternoon! Today's GAS is a Quadruples Sudoku, which, when written alongside today's date, is one letter too long to fit into the f-puzzles title limit.

Normal Sudoku rules apply. Each number written in a white circle must appear somewhere in the four cells around that circle.



f-puzzles - <https://f-puzzles.com/?id=284qax3b>

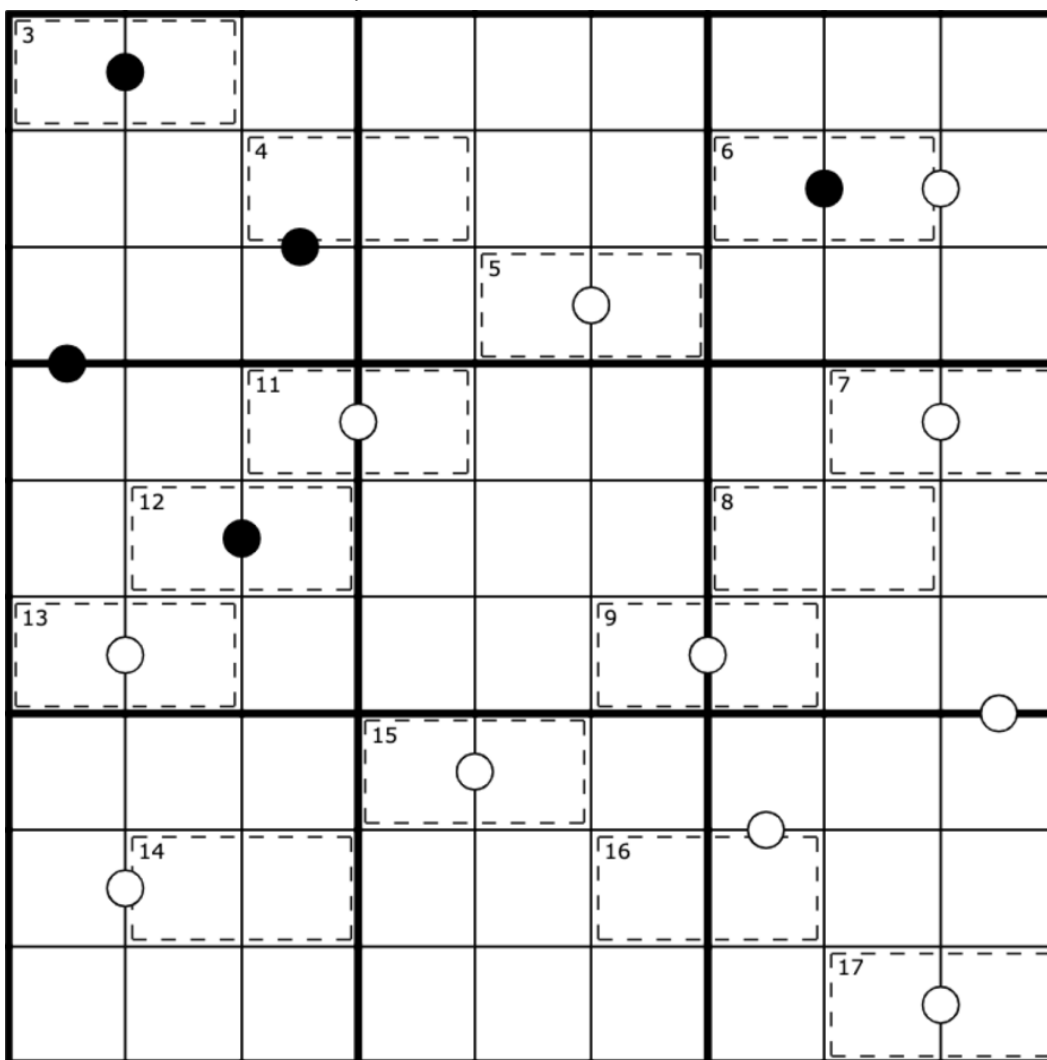
CtC - <https://tinyurl.com/3uhhypx9>

## July 17, 2022: Connect the Dots

Philip Newman

“It is just human nature to take time to connect the dots, I know that. But I also know that there can be a day of reckoning when you wish you had connected the dots more quickly.” -- Al Gore

Today's GAS is a Killer Kropki Pairs Sudoku! Normal sudoku rules apply. Digits in cages cannot repeat and must sum to the total given. Digits in cells separated by a white dot must be consecutive (have a difference of 1); digits in cells separated by a black dot must have a ratio of 2:1. (No negative constraint - other pairs of digits may also be consecutive or have a 2:1 ratio.)



Play on f-puzzles: <https://f-puzzles.com/?id=226xnxuy>

Play on CTC App: <https://tinyurl.com/4udnfdk5> (still no solution check!)

## July 18, 2022: First Impression

Clover

According to WikiHow, here are some simple steps to follow to succeed at this first impression sudoku: Prepare talking points beforehand, set clear goals for the sudoku, identify any stakes, and develop a personal elevator pitch. Dress your best and try to schedule the sudoku if you can; when you get there, smile and offer an appropriate greeting. Practice active listening and pay attention to the sudoku's interest level, adjusting your approach to keep it engaged, and leave it wanting more.

And that's what you need for a great first impression! Sounds simple enough, so I expect lots and lots of party hats today. 🎉

Normal sudoku rules apply. Also, digits in gray squares must be greater than both the first digit in their row and the first digit in their column. For instance, if the gray square in r4c2 contains a 6, then r4c1 and r1c2 must contain digits lower than 6.

				7				
		9			6			
	8					3		
			2				5	
5								8
	4				3			
		7					8	
			4			9		
				5				

f-puzzles: <https://f-puzzles.com/?id=24o68m6o>

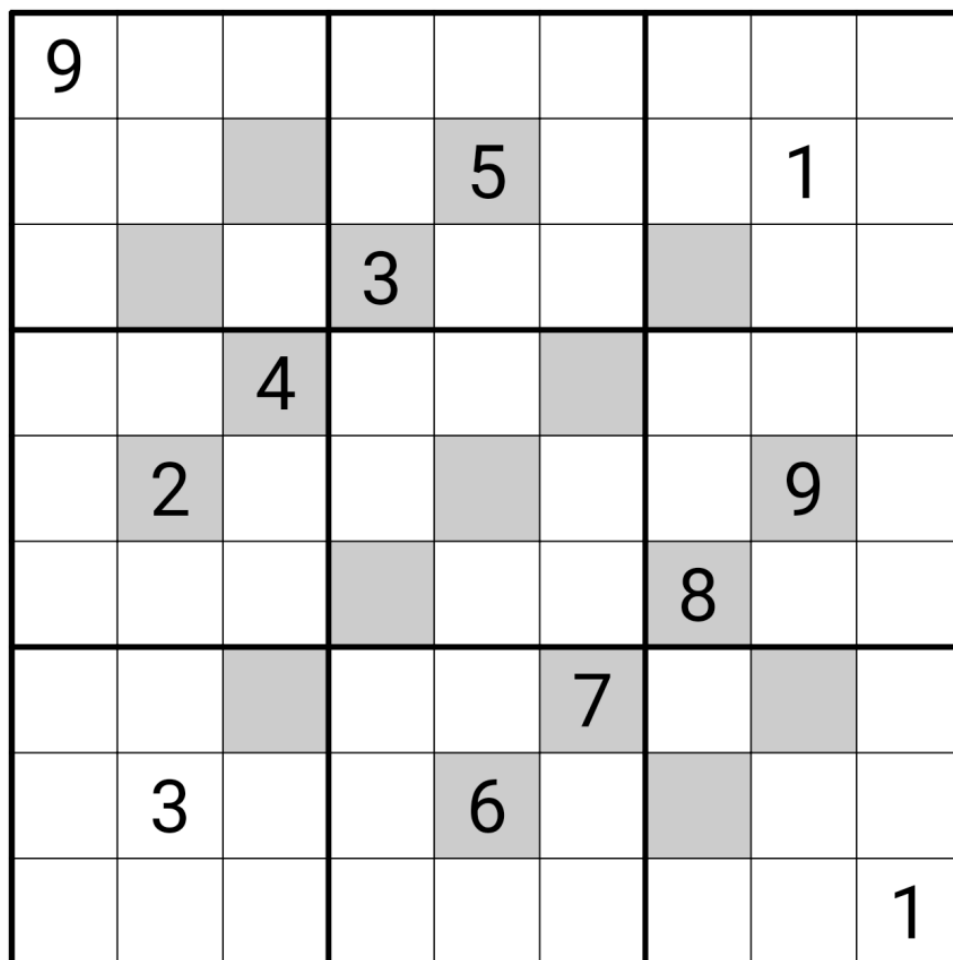
CtC: <https://tinyurl.com/mr2jc29d>

## July 19, 2022: (Another) First Impression

Sam Cappleman-Lynes

How often do you get a chance to make a second first impression? Today is such an opportunity! Refer to Clover's above advice if you want to make the most of it.

In today's First Impression Sudoku, normal Sudoku rules apply. Additionally, a number in a grey cell must be larger than both the first cell in its row and the first cell in its column.



f-puzzles - <https://f-puzzles.com/?id=28hebunn>

CtC - <https://tinyurl.com/2a3w5ude>

## July 20, 2022: A Lasting Impression

Philip Newman

I know what you're thinking - clover and Sam did the same variant again, surely Philip won't copy them. And you're right... But only because I tested their puzzles right after taking Benadryl for my allergies, and in my drugged state this is the ruleset I came up with... Today's GAS is a... First and Last Impressions? Sudoku! (This probably needs a better name. Bonus hat to whoever suggests the best name for the variant!)

Normal sudoku rules apply. Digits in grey cells must have a value between the left- and right-most digits of their row, and between the top- and bottom-most digits of their column.

(Note: the first digit in the row or column does not have to be the smaller digit. Either the first digit is smaller than all the grey cells and the last digit is bigger, or the first digit is bigger than all the grey cells and the last digit is smaller.)

								1
				9				
		2	3		4	5		
		6	4			7		
	8			5			1	
		3			6	4		
		5	6		7	8		
				2				
9								

Play on f-puzzles: <https://f-puzzles.com/?id=2bkvrby>

Play on CTC App: <https://tinyurl.com/s6p943s3> (still no solution check!)



## July 21, 2022: Odd-Even Count

Clover

I enjoyed seeing all of the names you proposed for yesterday's variant, so here's a spicy riff on the same idea: you're allowed to come up with a name for this variant too, but since it already has a name, this time there's the added risk of infuriating the entire sudoku community to make things a little more exciting. 🐈

Today's GAS is a *variant formerly known as* odd-even count sudoku! Normal sudoku rules apply. An odd digit in a gray cell tells you how many of the surrounding cells (including diagonals) contain odd digits. An even digit in a gray cell tells you how many of the surrounding cells (including diagonals) contain even digits. The digit in the cell itself is not included in the count of odd or even digits.

3		2				5		7
			4				8	
		1						6
						7		
			9		3			
		7						
7						4		
	6				5			
8		9				3		2

f-puzzles: <https://f-puzzles.com/?id=2ctfemmc>

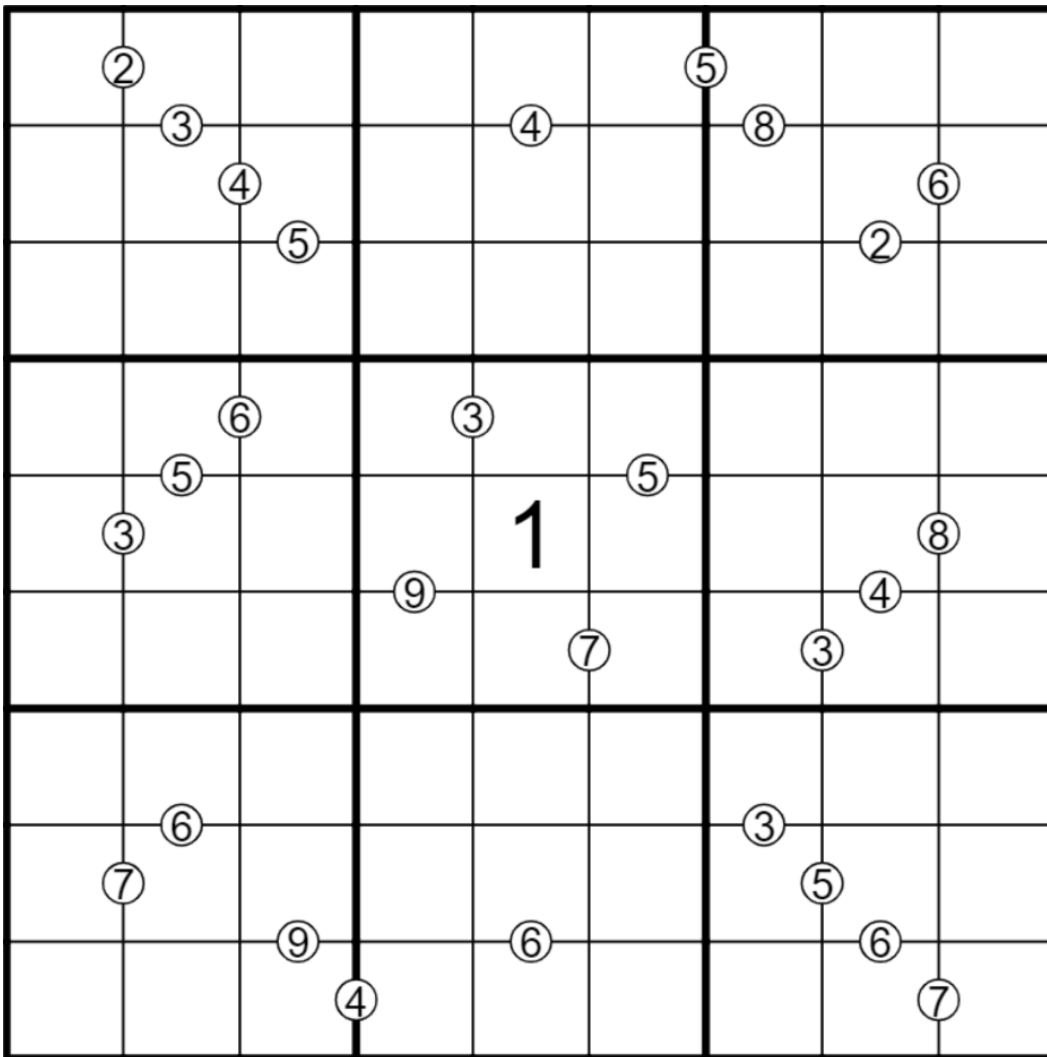
CtC: <https://tinyurl.com/2p36nvxd>

## July 22, 2022: Greater Sudoku

Sam Cappleman-Lynes

If you've been around GAS for a while, you might remember the (in)famous Quad Max saga from last year. Today's variant is something of a little cousin to (our version of 🤖 ) Quad Max - but by no means lesser. In fact, today's GAS is a Greater Sudoku!

Normal Sudoku rules apply. A number in a white circle indicates the larger of the two numbers it touches.



f-puzzles - <https://f-puzzles.com/?id=23s4jb5o>

CtC - <https://tinyurl.com/ywxscu8r>

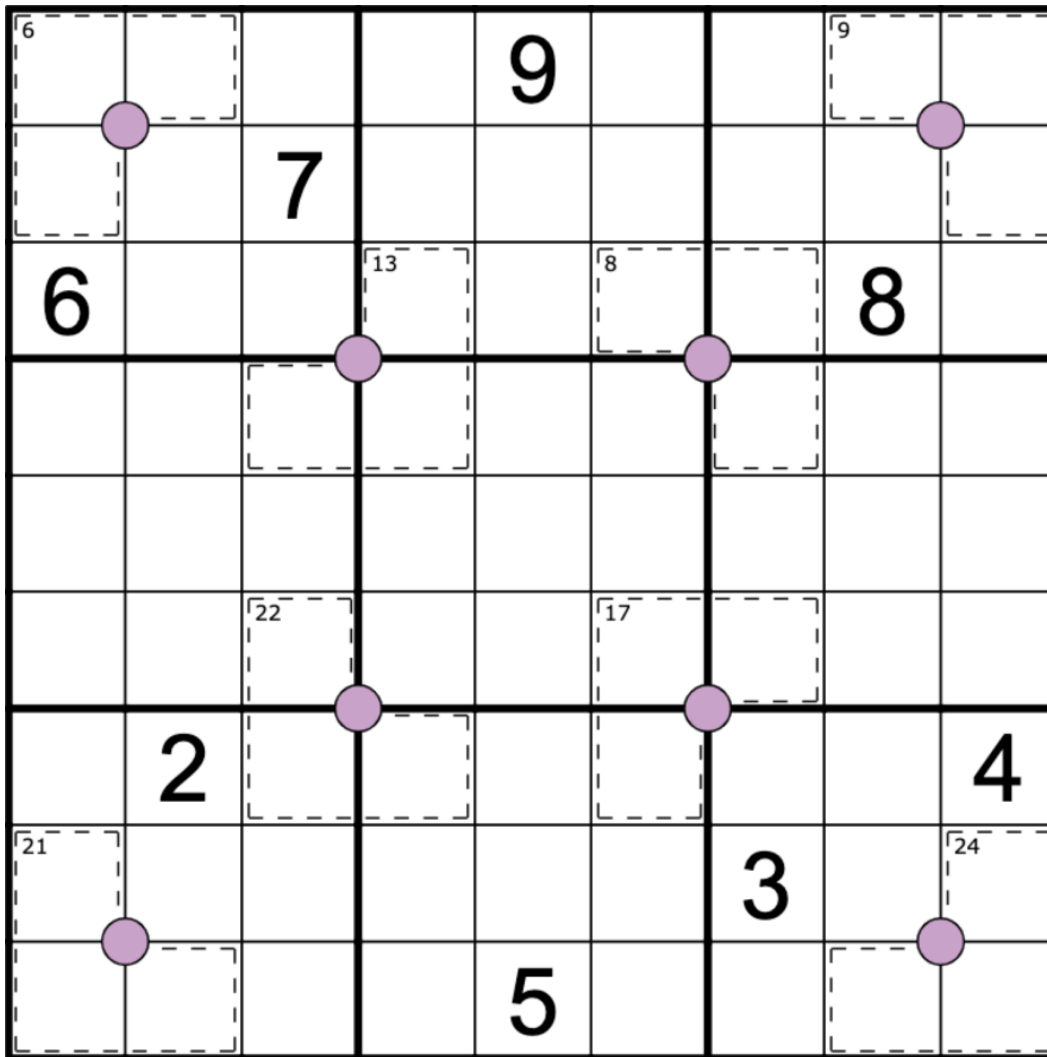
## July 23, 2022: Connect Four

Philip Newman

“The events in our lives happen in a sequence in time, but in their significance to ourselves they find their own order...” — Eudora Welty

Today’s GAS features another close relative to the Quad Max family: it’s a Killer Quad Renban Sudoku! (Quad Renban of course being short for the Quadrisequitur René Bandana dynasty, the First, Second, Third, etc. of their name.)

Normal sudoku rules apply. Digits in cages cannot repeat and must sum to the total given. The four digits surrounding a purple dot must form a non-repeating consecutive set of digits, in some order.



Play on f-puzzles: <https://f-puzzles.com/?id=2cyu57of>

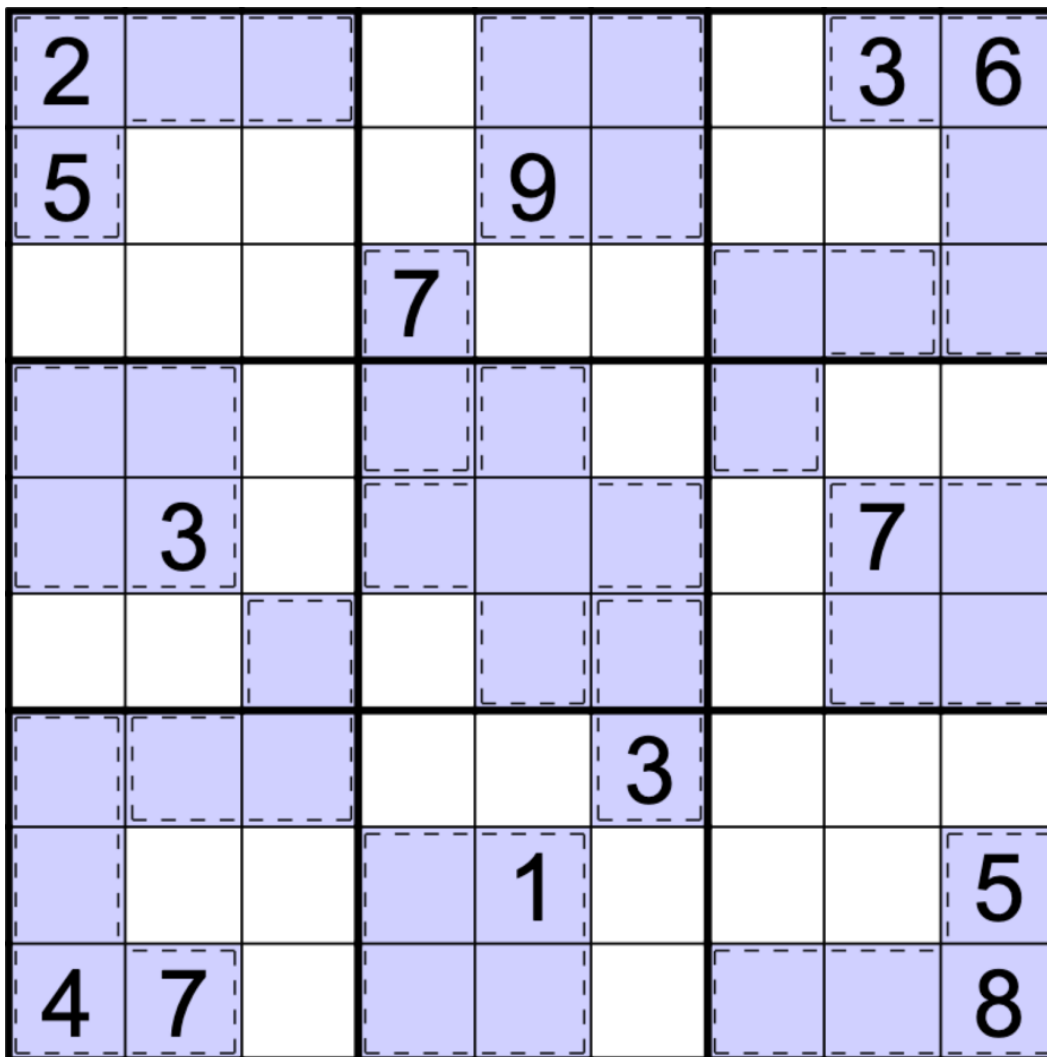
Play on CTC App: <https://tinyurl.com/yknp9mea>

## July 24, 2022: Antirenban

Clover

Today's GAS is an Aunt Renban, er, antirenban. Along with Uncle Renban, she forms a distant branch of the Quad Max family tree - I've informed amateur genealogist Philip Newman and you should expect more intriguing family connections to be unearthed soon!

Normal sudoku rules apply. Also, a cage may not contain any duplicated or consecutive digits. For instance, if a 6 appears in a cage, then 5, 6, and 7 may not appear anywhere else in that cage.



f-puzzles: <https://f-puzzles.com/?id=27v95t85>

CtC: <https://tinyurl.com/yf5pffaw>

## July 25, 2022: Pirate Sudoku

Sam Cappleman-Lynes

What's a pirate's favourite letter of the alphabet? You might think it's R, but their first love be the C!

Today's GAS is a Pirate Sudoku 🏴‍☠️ Normal Sudoku rules apply. Additionally, each 5 in the grid can only be directly adjacent (vertically and horizontally) to numbers less than 5.

						2	1	
6	7						3	4
	1	5						
						1		
				5				
		1						
						5	2	
2	8						6	7
	4	3						

f-puzzles - <https://f-puzzles.com/?id=23sn6r7w>

CtC - <https://tinyurl.com/mr3mmjtz>

## July 26, 2022: A Third-Full Grid

Philip Newman

How optimistic are you? Are you a third-full or two-thirds-empty sort of person?

Today's GAS is a Classic Sudoku! I've left two thirds of the puzzle empty for your solving pleasure!

Normal sudoku rules apply. And that's it!

1		9						
	2		8					
		3		7		6		
	1		4		9		5	
6		2		5		8		4
	5		3		6		7	
		4		3		7		
					2		8	
						1		9

Play on f-puzzles: <https://f-puzzles.com/?id=2593kcx>

Play on CTC App: <https://tinyurl.com/bddskc42> (with solution check! yay)

## July 27, 2022: Liar Killer

Clover

You're walking down a forest path when you encounter three killer cages. You happen to know that in this particular forest, whenever cages travel in groups of three, exactly two of them always tell the truth, while the third always lies. "My sum is 3," says the first cage. "My sum is also 3," says the second cage. "And my sum is 12," says the third. What is a single sudoku that you can solve in order to determine who was telling the truth?

Today's GAS is a liar killer! Normal sudoku rules apply. Digits in a cage may not repeat. Also, in each of the nine 3x3 regions of the grid, there is exactly one killer cage that is "lying": the small number provided is NOT the correct sum of the digits in that cage. All other cages give the correct sum of their digits.

	<sup>3</sup>			<sup>10</sup>		<sup>4</sup>			
<sup>3</sup>	<b>3</b>		<sup>7</sup>		<sup>7</sup>	<sup>11</sup>	<b>2</b>	<sup>4</sup>	
		<b>8</b>			<b>2</b>	<b>7</b>			
	<sup>7</sup>	<b>5</b>				<sup>7</sup>			
<sup>7</sup>				<b>1</b>			<sup>7</sup>		
	<sup>7</sup>					<sup>7</sup>	<b>3</b>		
<sup>3</sup>	<sup>23</sup>	<b>3</b>	<sup>7</sup>	<b>4</b>		<sup>7</sup>	<b>1</b>	<sup>24</sup>	<sup>5</sup>
	<b>9</b>			<sup>10</sup>				<b>7</b>	
	<sup>3</sup>					<sup>5</sup>			

f-puzzles: <https://f-puzzles.com/?id=255jn6me>

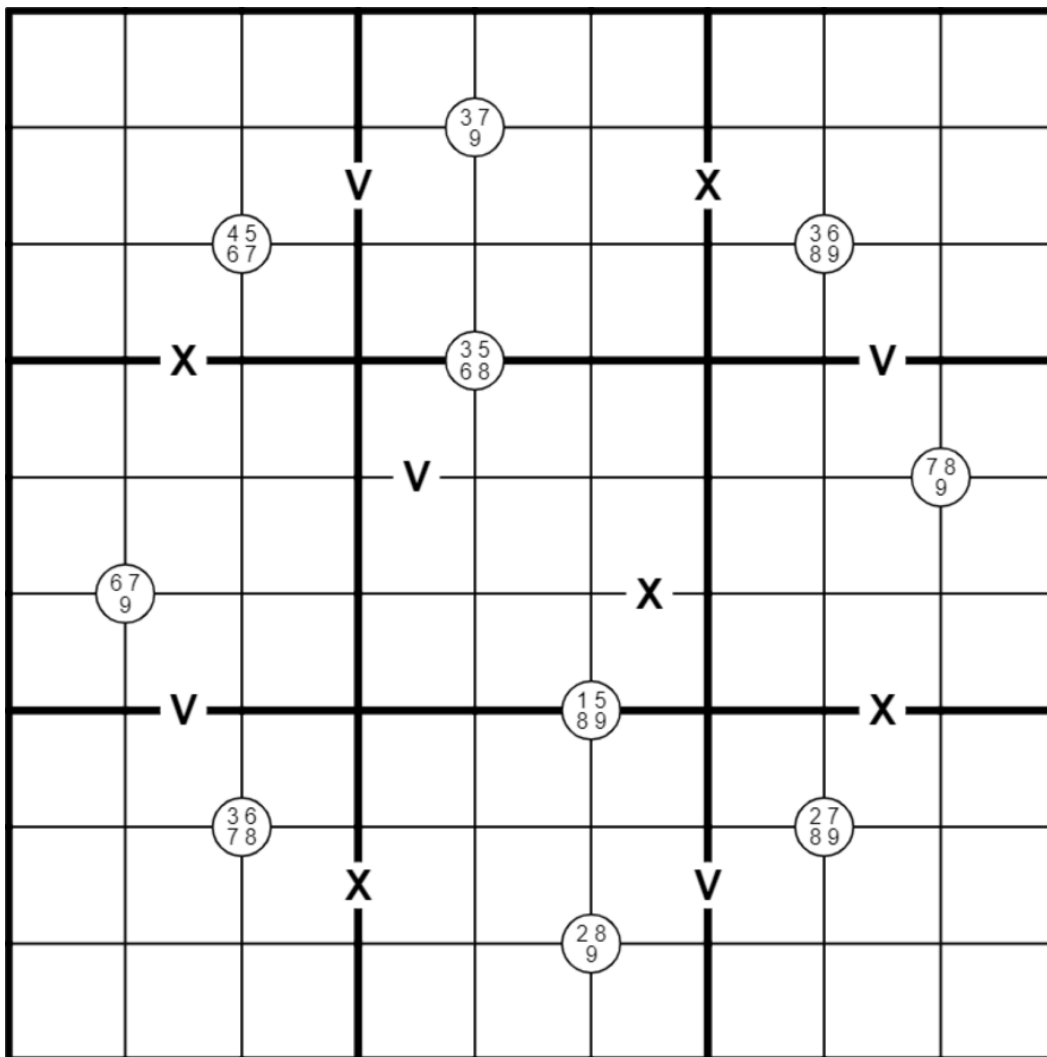
CtC: <https://tinyurl.com/ycxytp8a>

## July 28, 2022: XV Quadruples

Sam Cappleman-Lynes

Good afternoon! Today's GAS is an XV Quadruples Sudoku.

- Normal Sudoku rules apply.
- In addition, two cells separated by an X must contain numbers that add up to 10 and two cells separated by a V must contain numbers that add up to 5. (Two cells without such a marking may add up to any number, including 5 or 10).
- Also, numbers that are written in a white circle must appear somewhere in the four cells around the circle.



f-puzzles - <https://f-puzzles.com/?id=2a4yqxix>

CtC - <https://tinyurl.com/muvm8mrw>



July 29, 2022: I'm A Man, I'm 40

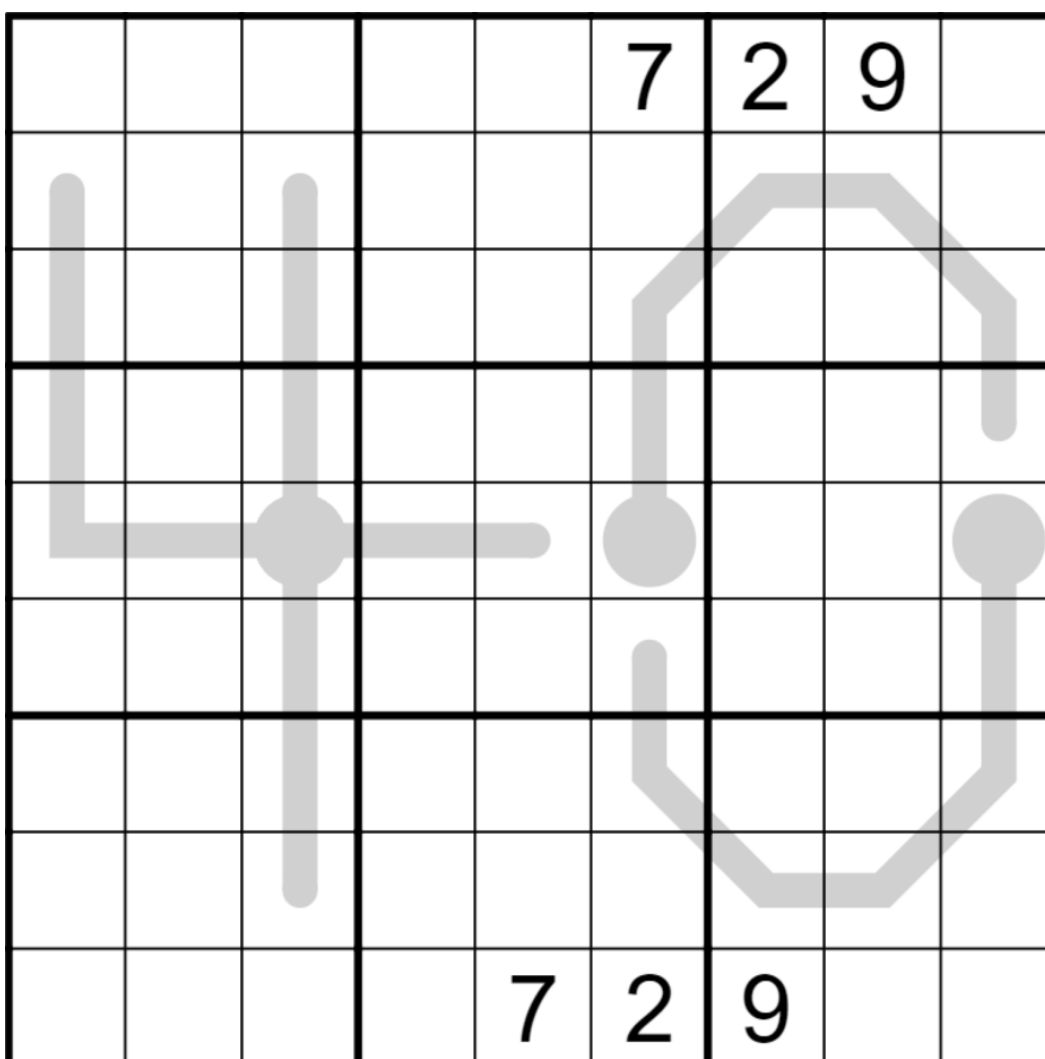
Philip Newman



For the likely large percentage of you who don't know the reference in today's puzzle title: <https://www.youtube.com/watch?v=zQ3oXkDPKbM>

Today's GAS is a Thermo Sudoku!

Normal sudoku rules apply. Digits along thermometers must strictly increase from bulb to tip.



Play on f-puzzles: <https://f-puzzles.com/?id=2dp6vlbj>

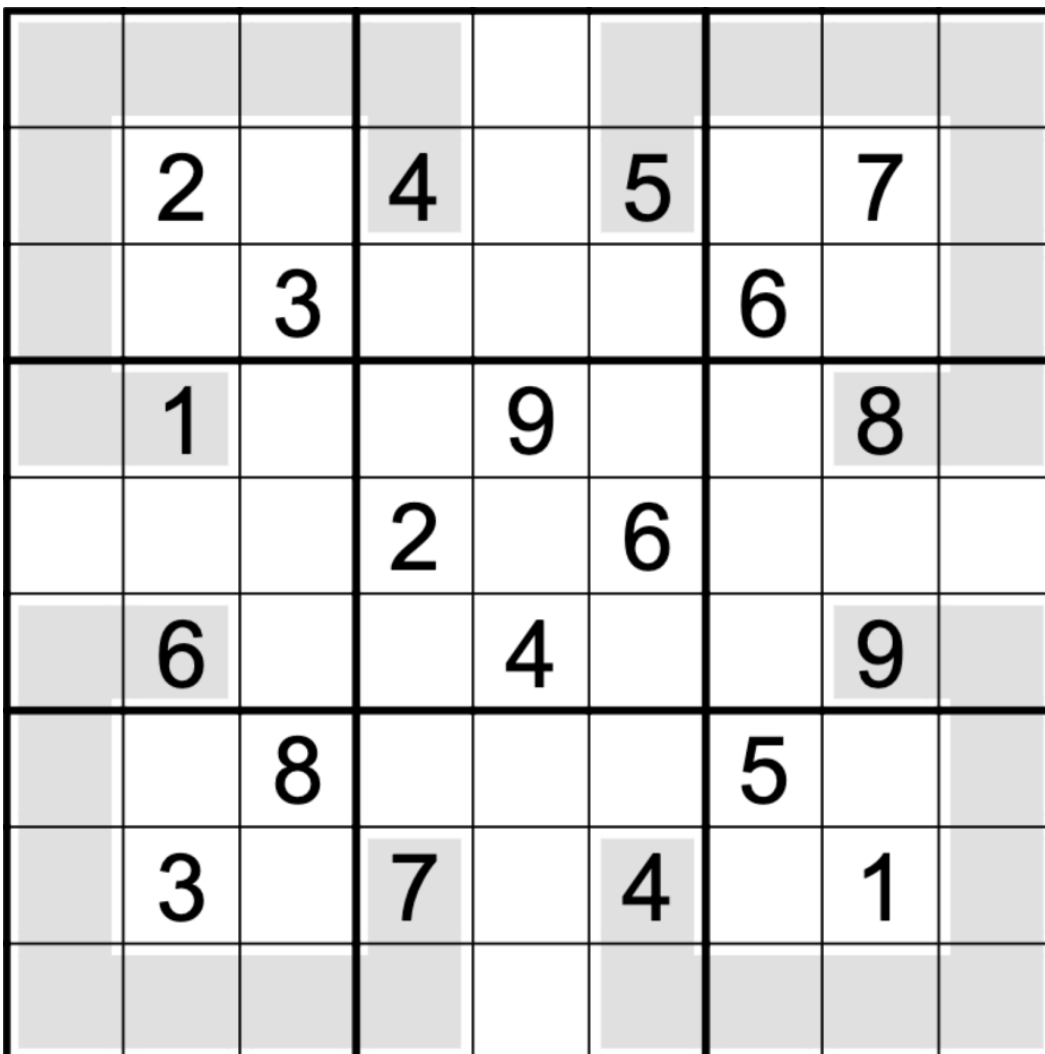
Play on CTC App: <https://tinyurl.com/yckwcmxm>

## July 30, 2022: Extra Regions

Clover

Hi Mark! Now that you've been reading the intros to these puzzles, I thought I'd take the chance to let you know that we appreciate you. Thank you so much for all of the solves, and congrats on the UK sudoku result! By the way, did you know that the dinosaurs are only mostly real? We almost always go for a real one, but Philip's been known to invent a new one from time to time... 🤔

Today's GAS is an extra regions sudoku. Normal sudoku rules apply. Also, each shaded gray region contains the digits 1 through 9 once each.



f-puzzles: <https://f-puzzles.com/?id=25zwcwclq>

CtC: <https://tinyurl.com/rdhjmp5j>

## July 31, 2022: Centre Dot Sudoku

Sam Cappleman-Lynes

Today's GAS is a particular brand of Extra Regions Sudoku sometimes known as Centre Dot Sudoku.

Normal Sudoku rules apply. In addition, each number must appear exactly once somewhere in the grey cells, at the centre of each box.

3	4		1		2		6	
1	■	2		■		3	■	4
	5						7	
6					1			8
	■			2			■	
5			3					7
	6						8	
2	■	3		■		4	■	5
	7		2		5		9	3

f-puzzles - <https://f-puzzles.com/?id=2b9zlxgj>

CtC - <https://tinyurl.com/yhuz5ycw>

### Bonus 1: Counting Neighbours

Sam Cappleman-Lynes

A number in a cell marked with an O is equal to the number of distinct digits in the ring of 8 cells surrounding the marked cell. A number in a cell marked with an X is equal to the number of distinct digits in the four cells diagonally adjacent to the marked cell.

(Note for experienced solvers: although this variant normally has a negative constraint, this puzzle does not.)

X					X		9	O
	O						X	
O			X					O
8	9	1		2		O	X	
				O				
	O	O		3		4	2	8
O					X			O
	X						O	
O	6		X					X

<https://f-puzzles.com/?id=22ubnpob>

<https://tinyurl.com/ms62zud2>

**Bonus 2: 159**

Philip Newman

Normal sudoku rules apply. In each row, the digit in column 1 tells you the location of the 1 in that row. For instance, if a “3” appears in column 1, then the 1 in that row must appear in the third cell from the left. Similarly, the digit in column 5 tells you the location of the 5 in its row, and the digit in column 9 tells you the location of the 9 in its row.

		1						2
			2				3	
					3			4
						4	5	
				5				
	5	6						
6			7					
	7				8			
8						9		

<https://f-puzzles.com/?id=2cql2etm>

<https://tinyurl.com/4mx5w3y6>

### Bonus 3: Distance to 5

Clover

Normal sudoku rules apply. For each gray cell, a "5" must appear N steps above, below, or to the left or right of that cell, where N is the digit in the gray cell. For example, if a gray cell contains a 3, there must be at least one 5 that is 3 steps directly above, below, or to the left or right of that cell.

(5s may also appear at other distances from a gray cell: for example, if a 5 appears three steps to the right of a gray cell, and another 5 appears directly above the same gray cell, then the cell could contain either "3" or "1".)

1		9						
2								
3	4			8				
		8					9	
	9					7		
				7			6	3
								2
						9		1

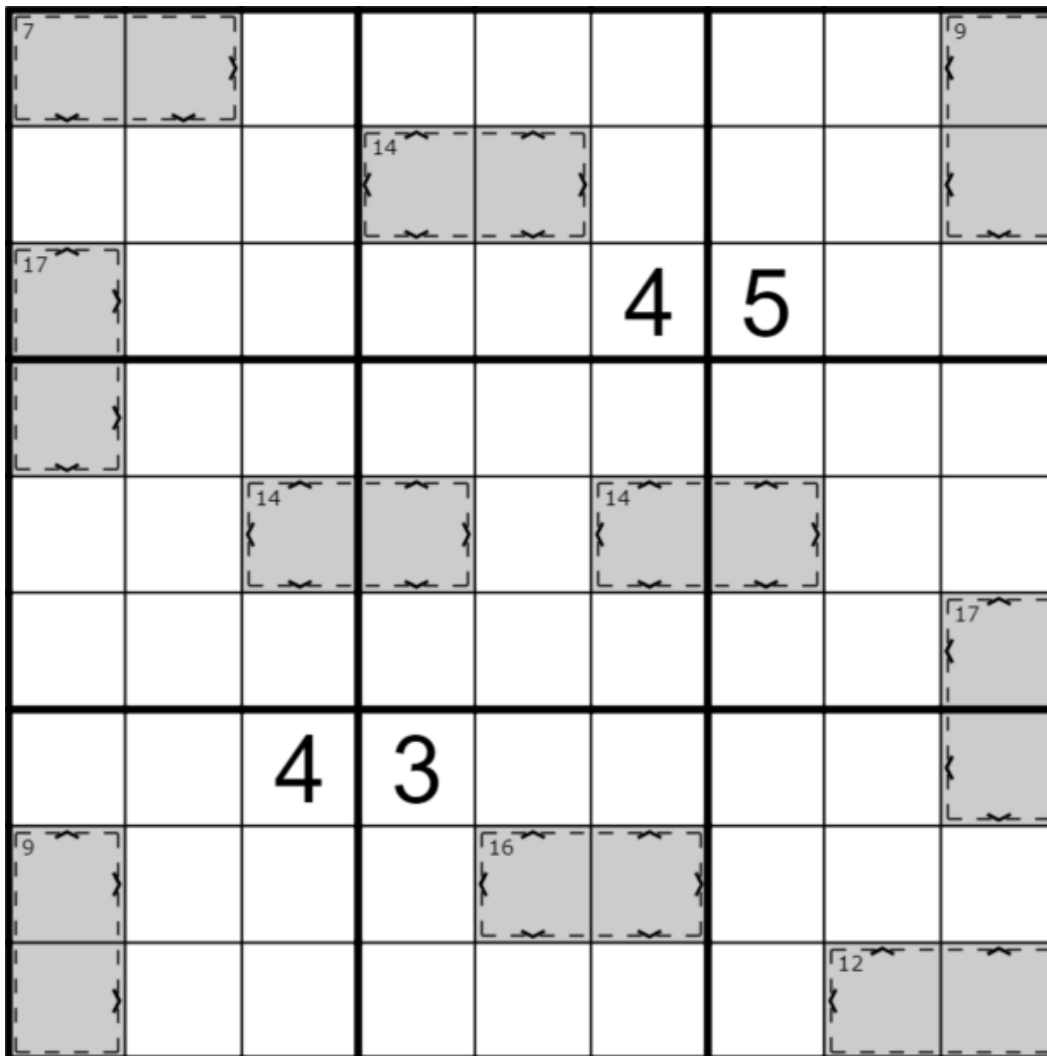
<https://f-puzzles.com/?id=23uvlme5>

<https://tinyurl.com/3ec56xae>

### Bonus 4: Killer Fortress

Sam Cappleman-Lynes

Normal sudoku rules apply. Each digit in a gray cell must be greater than all of the digits in white cells that are orthogonally adjacent to it. Digits in a cage may not repeat, and must sum to the indicated value.



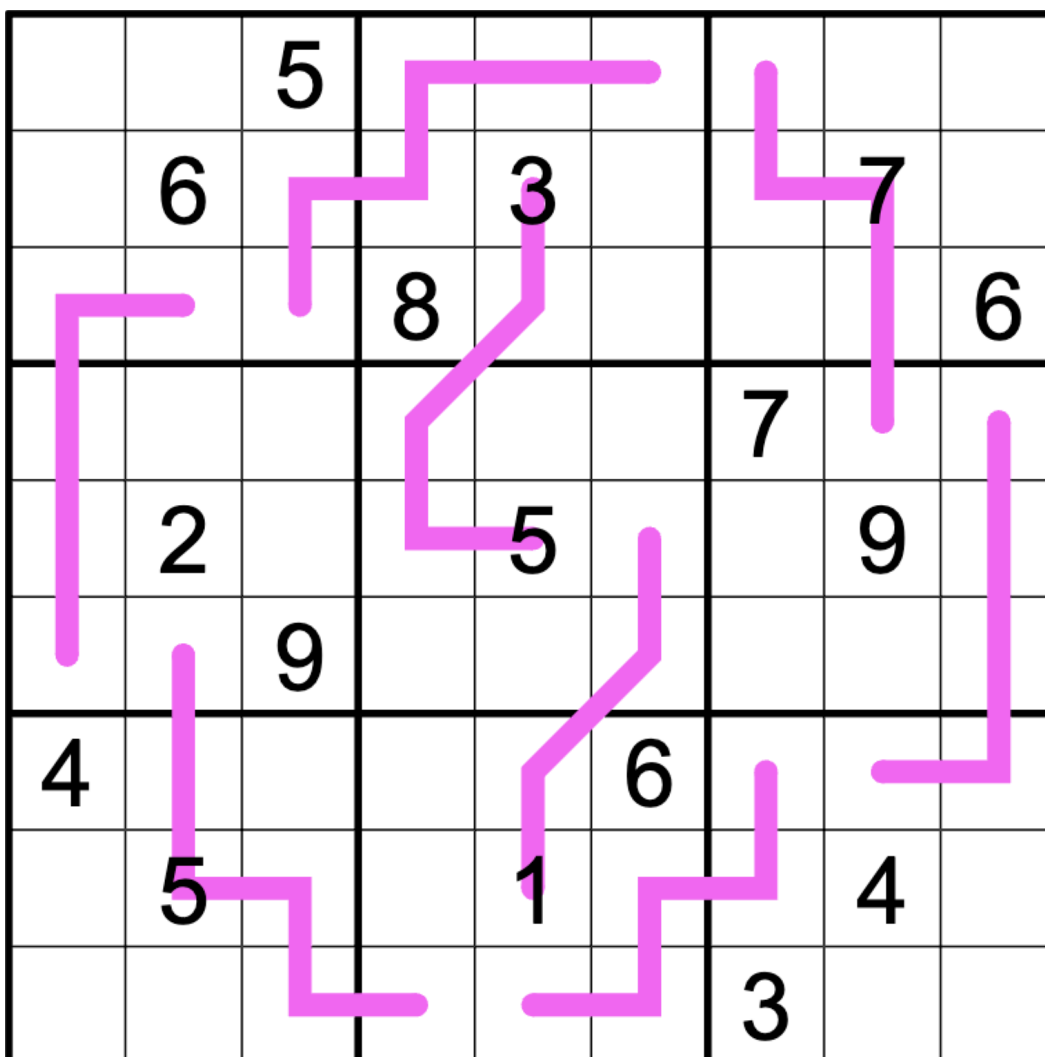
<https://f-puzzles.com/?id=2ygjhoop>

<https://tinyurl.com/yrww5bpp>

### Bonus 5: Renban

Philip Newman

Normal sudoku rules apply. Each purple line contains a set of consecutive digits, which may appear in any order: for instance, a purple line might contain the digits "2 4 1 3".



<https://f-puzzles.com/?id=24qer6f2>

<https://tinyurl.com/3ajvkk6u>



## Time Benchmarks

	One party hat	Two party hats	Today's dinosaur:
July 1, 2022	11:00	6:00	corralled carnotaurus
July 2, 2022	13:00	7:00	licensed lirainosaurus
July 3, 2022	12:00	6:30	truthful troodon
July 4, 2022	11:00	6:00	wandering walgettosuchus
July 5, 2022	15:00	8:00	Mannish muyelensaurus
July 6, 2022	15:00	8:00	ferocious ferganasaurus
July 7, 2022	12:00	6:30	generous gallimimus
July 8, 2022	17:00	9:00	explosive epachthosaurus
July 9, 2022	12:00	6:30	pointy polacanthus
July 10, 2022	9:00	5:30	distracted daspletosauru
July 11, 2022	12:00	6:30	iced iuticosaurus
July 12, 2022	13:30	7:30	pleading planicoxa
July 13, 2022	14:00	8:00	ordinary ouranosaurus
July 14, 2022	12:30	7:00	perfectly-aged aegyptosaurus
July 15, 2022	13:00	7:00	rubeosaurus, red in tooth and claw
July 16, 2022	12:00	6:30	lengthy ligabuesaurus
July 17, 2022	12:00	6:30	doting dongyangosaurus
July 18, 2022	13:00	7:30	impressive ingenia
July 19, 2022	14:00	7:30	secondary spinosaurus
July 20, 2022	20:00	10:00	sandwiched sarmientosaurus
July 21, 2022	15:00	8:00	innominate isanosaurus
July 22, 2022	13:00	7:00	related ratchasimasaurus
July 23, 2022	13:00	6:30	quadripedal qingxiusaurus
July 24, 2022	15:00	8:30	consanguineous coahuilaceratops
July 25, 2022	13:00	7:00	nautical nothosaurus

July 26, 2022	14:00	7:30	pessimistic paludititan
July 27, 2022	15:00	8:00	knaveish nankangia
July 28, 2022	12:00	6:30	Roman rukwatitan
July 29, 2022	19:82	7:29	older-than-it's-ever-been ornithopsis
July 30, 2022	13:00	7:00	Goodliffing gasosaurus
July 31, 2022	11:00	6:00	disjointed dilophosaurus